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WARE FRESSOLA VAN DER SLUYS & ADOLPHSON, LLP
BRADFORD GREEN, BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER	
ADDY, ANTHONY S	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,138	LI, KEVIN	
	Examiner	**Art Unit**	
	ANTHONY S. ADDY	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21* is/are allowed.

6)☒ Claim(s) *1-10,12-15,17-20 and 22-26* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on October 05, 2009. **Claims 1-10** and **12-26** are pending in the present application.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-10** and **12-26** have been considered but are moot in view of the new ground(s) of rejection. Arguments are directed to newly added limitations and the new grounds of rejection based on the newly added limitations follow below.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-2, 5-6, 8-9, 12-13, 17, 20, 22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Forrester, U.S. Patent Number 7,181,171 (hereinafter Forrester)** and further in view of **Leinonen et al., U.S. Publication Number 2003/0176176 A1 (hereinafter Leinonen).**

Regarding claim 1, Forrester teaches an apparatus (*e.g., wireless communication device 100*) (see Figs. 1 & 5), comprising: a first module for configuring a first antenna (*e.g., a main antenna 110*) for reception of signals in at least a first frequency band (*e.g., a cellular or PCS band*) (see col. 7, lines 33-38 and Fig. 5); a second module for configuring a second antenna (*e.g., an auxiliary antenna 120*) for reception of signals in a second frequency band (*e.g., a GPS band*) and at least the first frequency band received by the first antenna (*i.e., the cellular or PCS*

band received by the main antenna 110) (see col. 5, lines 12-26, col. 9, lines 49-66 and Fig. 5; *where an auxiliary antenna 120a & 120b is shown, however Forrester teaches the* *<u>antenna 120a & 120b can be integrated into a single antenna 120 as shown in Figs. 3 & 4</u>*), and a control component (*e.g., main controller 210*) (see col. 6, lines 35-39, col. 10, lines 6-8 & 44-46 and Fig. 5), wherein the first antenna (*i.e., the main antenna 110*) is for reception and transmission of signals in at least the first frequency band (*i.e., the cellular or PCS band)*, and the second antenna (*i.e., the auxiliary antenna 120*) is only for reception of signals in at least the first frequency band and the second frequency band (*i.e., the GPS band*) (see col. 5, lines 12-26 and col. 9, lines 49-66).

Forrester fails to explicitly teach the control component configured to provide at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the second module is configured to dynamically tune the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command provided by the control component.

In an analogous field of endeavor, Leinonen teaches a method and device for achieving space diversity reception in a system that has a first antenna (*e.g., an antenna 12*) and a second antenna (*e.g., an antenna 13*), wherein the first antenna is optimally tuned to a first frequency (*e.g., GSM-850*) for receiving signals and the second antenna can be tuned to a second frequency (*e.g., WCDMA-1900*) for receiving signals and also the first frequency (*i.e., GSM -850*), so that the second antenna also receives signals in the first frequency (see abstract, p. 4 [0057] and p. 5 [0062]). According to Leinonen, when the system is operating in the GSM-850 mode, the

second antenna (*i.e., antenna 13*) can be tuned by a second tuning module (*e.g., tuner 22*) to the reception frequency of the GSM-850 mode so that the second antenna also receives signals in the GSM-850 mode (see p. 5 [0062]). Leinonen further teaches a control signal is provided by a processor to the second tuning module for tuning the second antenna to either the second frequency band (*i.e., WCDMA 1900*) or at least the first frequency band (*i.e., GSM -850*) (see p. 5 [0062]) which in interpreted to read on providing at least one command by a control component to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Forrester with Leinonen to include an apparatus, wherein the control component is configured to provide at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the second module is configured to dynamically tune the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command provided by the control component, in order to advantageously tune a second antenna to a reception frequency range of a first antenna such that the second antenna also receives the reception frequency range of the first antenna to optimize overall antenna gain as taught by Leinonen (see p. 3 [0042-0043]).

Regarding claim 2, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, wherein the second antenna is dynamically tuned to receive signals in at least one of the bands received by the first antenna

when reception of signals in a GPS band is not desirable (see *Forrester,* col. 3, lines 44-52, col. 6, lines 57-65 and col. 9, lines 14-16 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 5, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, further comprising: a first tuning component (*e.g., signal processing module 180c*) that facilitates tuning the second antenna for reception of signals in a GPS band; and a second tuning component (*e.g., signal processing module 180b*) that facilitates tuning the second antenna for reception of signals in at least one of the bands received by the first antenna (see col. 5, lines 11-22 & 39-52 and Fig. 4 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 6, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, further comprising a RF switch (*e.g., switching module 185*) that facilitates coupling the second antenna to one of the first tuning component (*i.e., signal processing module 180c)* and the second tuning component (*i.e., signal processing module 180b*) (see col. 5, lines 11-22 & 39-51 and Fig. 4 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 8, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, further comprising: a first receiving component (*i.e., signal processing module 180b*) that facilitates at least one of transduction, modulation, and processing of a signal in at least one of the bands (*e.g., a PCS or cellular band*) received by the first antenna; and a second receiving component (*i.e., signal processing module 180c)* that facilitates at least one of transduction, modulation, and processing of a GPS signal (see col. 5, lines 11-22 & 39-51 and Fig. 4 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 9, Forrester in view of Leinonen teaches all the limitations of claim 8. Forrester in view of Leinonen further teaches an apparatus, further comprising a RF switch (*e.g., switching module 185*) that facilitates coupling the second antenna (*i.e., the auxiliary antenna 120*) to one of the first receiving component (*i.e., signal processing module 180b)* and the second receiving component (*i.e., signal processing module 180c*) (see col. 5, lines 11-22 & 39-51 and Fig. 4 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 12, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, further comprising an emergency component (*e.g., a special GPS function key on the keypad of the wireless communications device 100*) that automatically configures the second antenna (*i.e., the auxiliary antenna 120*) to receive a signal (*e.g., GPS data*) in the second frequency band (*i.e., the GPS band*) upon transmitting data to an emergency number (*i.e., reads on a user dialing 911 or some other emergency string or digits*) (see *Forrester,* col. 4, lines 30-50).

Regarding claim 13, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, comprising a mobile telephone (*e.g., wireless communications device 100*) (see *Forrester*, col. 2, lines 63-67 and Fig. 1).

Regarding claim 17, Forrester teaches a method (*see abstract*), comprising: providing a first module for configuring a first antenna (*e.g., a main antenna 110*) for reception of a signal in at least a first frequency band (*e.g., a cellular or PCS band*) (see col. 7, lines 33-38 and Fig. 5); providing a second module for configuring a second antenna (*e.g., an auxiliary antenna 120*) for reception of a signal in a second frequency band (*e.g., a GPS band*) and at least the first frequency band received by the first antenna (*i.e., the cellular or PCS band received by the main*

antenna 110) (see col. 5, lines 12-26, col. 9, lines 49-66 and Fig. 5; *where an auxiliary antenna 120a & 120b is shown, however Forrester teaches the* *<u>antenna 120a & 120b can be integrated into a single antenna 120 as shown in Figs. 3 & 4</u>*); wherein the first antenna (*i.e., the main antenna 110*) is for reception and transmission of signals in at least the first frequency band (*i.e., the cellular or PCS band)*, and the second antenna (*i.e., the auxiliary antenna 120*) is only for reception of signals in at least the first frequency band and the second frequency band (*i.e., the GPS band*) (see col. 5, lines 12-26 and col. 9, lines 49-66).

Forrester fails to explicitly teach providing a control component for providing at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the second module is configured to dynamically tune the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command provided by the control component.

In an analogous field of endeavor, Leinonen teaches a method and device for achieving space diversity reception in a system that has a first antenna (*e.g., an antenna 12*) and a second antenna (*e.g., an antenna 13*), wherein the first antenna is optimally tuned to a first frequency (*e.g., GSM-850*) for receiving signals and the second antenna can be tuned to a second frequency (*e.g., WCDMA-1900*) for receiving signals and also the first frequency (*i.e., GSM -850*), so that the second antenna also receives signals in the first frequency (see abstract, p. 4 [0057] and p. 5 [0062]). According to Leinonen, when the system is operating in the GSM-850 mode, the second antenna (*i.e., antenna 13*) can be tuned by a second tuning module (*e.g., tuner 22*) to the reception frequency of the GSM-850 mode so that the second antenna also receives signals in the

GSM-850 mode (see p. 5 [0062]). Leinonen further teaches a control signal is provided by a processor to the second tuning module for tuning the second antenna to either the second frequency band (*i.e., WCDMA 1900*) or at least the first frequency band (*i.e., GSM -850*) (see p. 5 [0062]) which in interpreted to read on providing at least one command by a control component to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Forrester with Leinonen to include a method of providing a control component for providing at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the second module is configured to dynamically tune the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command provided by the control component, in order to advantageously tune a second antenna to a reception frequency range of a first antenna such that the second antenna also receives the reception frequency range of the first antenna to optimize overall antenna gain as taught by Leinonen (see p. 3 [0042-0043]).

Regarding claim 20, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches a method, further comprising dynamically tuning the second antenna to receive signals in the second frequency band when reception of signals in at least the first frequency band is not desirable (see *Forrester*, col. 5, lines 21-22 & 50-52, col. 6, lines 35-39, col. 10, lines 6-8 & 44-46 and *Leinonen*, p. 4 [0057] and p. 5 [0062]).

Regarding claim 22, Forrester teaches an apparatus (*e.g., wireless communication device 100*) (see Figs. 1 & 5), comprising: means for configuring a first antenna (*e.g., a main antenna 110*) to receive signals in at least a first frequency band (*e.g., a cellular or PCS band*) (see col. 7, lines 33-38 and Fig. 5); means for configuring a second antenna (*e.g., an auxiliary antenna 120*) to receive signals in at least the first frequency band received by the first antenna (*i.e., the cellular or PCS band received by the main antenna 110*) and data (*e.g., a GPS data signal*) in a second frequency band (*e.g., a GPS band*) at a particular instance (see col. 5, lines 12-26, col. 6, lines 35-38, col. 9, lines 49-66 and Fig. 5; *where an auxiliary antenna 120a & 120b is shown, however Forrester teaches the <u>antenna 120a & 120b can be integrated into a single antenna 120 as shown in Figs. 3 & 4</u>*), and wherein the first antenna (*i.e., the main antenna 110*) is for reception and transmission of signals in at least the first frequency band (*i.e., the cellular or PCS band)*, and the second antenna (*i.e., the auxiliary antenna 120*) is only for reception of signals in at least the first frequency band and the second frequency band (*i.e., the GPS band*) (see col. 5, lines 12-26 and col. 9, lines 49-66).

Forrester fails to explicitly teach means for providing at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the means for configuring the second antenna are for further dynamically tuning the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command.

In an analogous field of endeavor, Leinonen teaches a method and device for achieving space diversity reception in a system that has a first antenna (*e.g., an antenna 12*) and a second antenna (*e.g., an antenna 13*), wherein the first antenna is optimally tuned to a first frequency

(*e.g., GSM-850*) for receiving signals and the second antenna can be tuned to a second frequency (*e.g., WCDMA-1900*) for receiving signals and also the first frequency (*i.e., GSM -850*), so that the second antenna also receives signals in the first frequency (see abstract, p. 4 [0057] and p. 5 [0062]). According to Leinonen, when the system is operating in the GSM-850 mode, the second antenna (*i.e., antenna 13*) can be tuned by a second tuning module (*e.g., tuner 22*) to the reception frequency of the GSM-850 mode so that the second antenna also receives signals in the GSM-850 mode (see p. 5 [0062]). Leinonen further teaches a control signal is provided by a processor to the second tuning module for tuning the second antenna to either the second frequency band (*i.e., WCDMA 1900*) or at least the first frequency band (*i.e., GSM -850*) (see p. 5 [0062]) which in interpreted to read on providing at least one command by a control component to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Forrester with Leinonen to include an apparatus, comprising means for providing at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band, wherein the means for configuring the second antenna are for further dynamically tuning the second antenna to either the second frequency band or at least the first frequency band in accordance with the at least one command, in order to advantageously tune a second antenna to a reception frequency range of a first antenna such that the second antenna also receives the reception frequency range of the first antenna to optimize overall antenna gain as taught by Leinonen (see p. 3 [0042-0043]).

Regarding claim 24, Forrester teaches a system (*see abstract*), comprising: a first antenna (*e.g., a main antenna 110*) that facilitates reception of signals in at least two frequency bands (*e.g., a cellular or PCS band*) (see col. 7, lines 33-38 and Fig. 5); a second antenna (*e.g., an auxiliary antenna 120*) that facilitates reception of signals in a second frequency band (*e.g., a GPS band*) and at least one of the frequency bands received by the first antenna (*i.e., the cellular or PCS band received by the main antenna 110*) (see col. 5, lines 12-26, col. 9, lines 49-66 and Fig. 5; *where an auxiliary antenna 120a & 120b is shown, however Forrester teaches the* <u>*antenna 120a & 120b can be integrated into a single antenna 120 as shown in Figs. 3 & 4*</u>); a control component (*e.g., main controller 210*) (see col. 6, lines 35-39, col. 10, lines 6-8 & 44-46 and Fig. 5), wherein the first antenna (*i.e., the main antenna 110*) is for reception and transmission of signals in at least the first frequency band (*i.e., the cellular or PCS band),* and the second antenna (*i.e., the auxiliary antenna 120*) is only for reception of signals in at least the first frequency band and the second frequency band (*i.e., the GPS band*) (see col. 5, lines 12-26 and col. 9, lines 49-66).

Forrester fails to explicitly teach the control component configured to provide at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least one of the first frequency bands received by the first antenna, and a tuning component configured to dynamically tune second antenna to either the second frequency band or at least one of the first frequency bands received by the first antenna in accordance with the at least one command.

In an analogous field of endeavor, Leinonen teaches a method and device for achieving space diversity reception in a system that has a first antenna (*e.g., an antenna 12*) and a second

antenna (*e.g., an antenna 13*), wherein the first antenna is optimally tuned to a first frequency (*e.g., GSM-850*) for receiving signals and the second antenna can be tuned to a second frequency (*e.g., WCDMA-1900*) for receiving signals and also the first frequency (*i.e., GSM -850*), so that the second antenna also receives signals in the first frequency (see abstract, p. 4 [0057] and p. 5 [0062]). According to Leinonen, when the system is operating in the GSM-850 mode, the second antenna (*i.e., antenna 13*) can be tuned by a second tuning module (*e.g., tuner 22*) to the reception frequency of the GSM-850 mode so that the second antenna also receives signals in the GSM-850 mode (see p. 5 [0062]). Leinonen further teaches a control signal is provided by a processor to the second tuning module for tuning the second antenna to either the second frequency band (*i.e., WCDMA 1900*) or at least the first frequency band (*i.e., GSM -850*) (see p. 5 [0062]) which in interpreted to read on providing at least one command by a control component to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least the first frequency band.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Forrester with Leinonen to include a system, wherein the control component is configured to provide at least one command to cause dynamic tuning of the second antenna for reception of signals in either the second frequency band or at least one of the first frequency bands received by the first antenna, and a tuning component configured to dynamically tune second antenna to either the second frequency band or at least one of the first frequency bands received by the first antenna in accordance with the at least one command, in order to advantageously tune a second antenna to a reception frequency range of a first antenna such that

the second antenna also receives the reception frequency range of the first antenna to optimize overall antenna gain as taught by Leinonen (see p. 3 [0042-0043]).

Regarding claim 25, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, wherein the first frequency band is a personal communication service band, a cellular band, a Korean personal communication band, or a China personal communication service band (see *Forrester,* col. 7, lines 33-38).

Regarding claim 26, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen further teaches an apparatus, wherein the second frequency band is a global positioning system band (see *Forrester,* col. 4, lines 56-61 and col. 5, lines 12-26).

5. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Forrester, U.S. Patent Number 7,181,171 (hereinafter Forrester)** and in view of **Leinonen et al., U.S. Publication Number 2003/0176176 A1 (hereinafter Leinonen)** as applied to claims 5 and 9 above, and further in view of **Braun et al., U.S. Patent Number 6,980,782 (hereinafter Braun).**

Regarding claims 7 and 10, Forrester in view of Leinonen teaches all the limitations of claims 5 and 9. Forrester in view of Leinonen fails to explicitly teach the radio frequency switch being one of a PIN-diode, a micro electro-mechanical system switch, and a field effect transistor switch.

In an analogous field of endeavor, Braun teaches an antenna device for transmitting and receiving radio frequency waves installable in a communication device includes an antenna structure switchable between antenna configuration states, wherein an antenna switching unit

may be PIN diode switches, GaAs field effect transistors (FET), or microelectromechanical system (MEMS) switches (see abstract, col. 11, lines 15-24 and Fig. 7a).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Forrester and Leinonen with Braun, wherein the RF switch is one of a PIN-diode, a MEMS switch, and a FET switch, in order to electrically connect and disconnect antenna elements in parallel or in series with each other, or completely connect or disconnect one or more antenna elements to ground as taught by Braun (see col. 11, lines 15-24).

6. Claims 3, 4, 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Forrester, U.S. Patent Number 7,181,171 (hereinafter Forrester)** and in view of **Leinonen et al., U.S. Publication Number 2003/0176176 A1 (hereinafter Leinonen)** as applied to claims 1 and 22 above, and further in view of **Eggleston, U. S. Patent Number 6,414, 640 (hereinafter Eggleston)**.

Regarding claims 3, 4, 15 and 23, Forrester in view of Leinonen teaches all the limitations of claims 1 and 22. Forrester in view of Leinonen fails to explicitly teach wherein the second antenna is a top-mounted inverted F-antenna and the inverted F-antenna exhibits circular polarization characteristics.

However, the use of a top-mounted inverted F-antenna exhibiting circular polarization characteristics is very well known in the art as taught for example by Eggleston. Eggleston teaches a top-mounted inverted F-antenna (TOPIFA) used in a mobile station, and wherein the top-mounted inverted F-antenna assembly exhibits circular polarization characteristics (see col. 3, lines 35-47, col. 3, lines 64-67, col. 5, lines 39-52 and Fig. 3). According to Eggleston, the

antenna assembly is used in a mobile station operable pursuant to conventional cellular operation as well as to receive GPS signals used for positioning purposes and because of the circular polarization characteristics of the resultant antenna transducer, a relatively high antenna gain characteristic is provided by the antenna transducer (see col. 6, lines 29-41).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to implement the antenna assembly of Eggleston in the communication system of Forrester and Leinonen, in order to realize a relatively high antenna gain characteristic.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Forrester, U.S. Patent Number 7,181,171 (hereinafter Forrester)** and in view of **Leinonen et al., U.S. Publication Number 2003/0176176 A1 (hereinafter Leinonen)** as applied to claim 1 above, and further in view of **Boyle, U. S. Publication Number 2003/0103010 A1 (hereinafter Boyle)**.

Regarding claim 14, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen fails to explicitly teach wherein the second antenna comprises a radiating element that is coupled to a transmission line, and wherein a length of the transmission line is selectable between at least two lengths.

However, the feature of selecting the length of a transmission between at least two lengths is very well known in the art as taught for example by Boyle.

In an analogous field of endeavor, Boyle teaches a dual band antenna arrangement, wherein the dual band antenna comprises a radiating element that is coupled to a transmission line, and wherein a length of the transmission line is selectable between at least two lengths (see p. 2 [0034], p.4 [0053] and Fig. 2).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Boyle in the antenna arrangement of Forrester and Leinonen, in order to improve and realize a broader bandwidth and effectively filter spurious emissions at the antenna as taught by Boyle (see p. 4 [0052 & 0053]).

8. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Forrester, U.S. Patent Number 7,181,171 (hereinafter Forrester)** and in view of **Leinonen et al., U.S. Publication Number 2003/0176176 A1 (hereinafter Leinonen)** as applied to claim 17 above, and further in view of **Ramasamy et al., U. S. Publication Number 2004/0125018 A1 (hereinafter Ramasamy)**.

Regarding claims 18 and 19, Forrester in view of Leinonen teaches all the limitations of claim 1. Forrester in view of Leinonen fails to explicitly teach altering a length of a transmission line associated with the second antenna to tune the second antenna.

However, the feature of altering a length of a transmission line associated with the second antenna to tune the second antenna is very well known in the art as taught for example by Ramasamy.

In an analogous field of endeavor, Ramasamy teaches adjusting a length of a transmission line associated with an antenna to tune the antenna (see p. 5 [0072]).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Ramasamy in the antenna arrangement of Forrester and Leinonen, in order to increase the bandwidth of one or more frequency bands of an antenna without deteriorating the performance of the antenna at other frequency bands.

Allowable Subject Matter

9. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. **Claim 21** is allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:

The present invention relates to utilizing a single antenna structure with respect to enabling receive diversity and GPS communications within a mobile communications device.

The instant invention with respect to **claim 21**, teaches a method, identifying the uniquely distinct features of "*coupling the second antenna to a second switch; and further coupling the second switch to one of a first receiving component that facilitates one of processing, transduction, and modulation of a signal in the second frequency band and a second receiving component that facilitates one of processing, transduction, and modulation of a signal in at least the frequency band received by the first antenna*."

The closest prior art, **Forrester, U.S. Patent Number 7,181,171** teaches a method (*see abstract*), comprising: providing a mobile communication device (*e.g., wireless communication device 100*) that includes a first antenna (*e.g., a main antenna 110*) tuned to a signal in at least a first frequency band (*e.g., a cellular or PCS band*) (see col. 7, lines 33-38 and Fig. 5) and a second antenna (*e.g., an auxiliary antenna 120*) tuned to receive signals in a second frequency band (*e.g., a GPS band*) and at least the first frequency band (*i.e., the cellular or PCS band received by the main antenna 110*) (see col. 5, lines 12-26, col. 9, lines 49-66 and Fig. 5; *where an auxiliary antenna 120a & 120b is shown, however Forrester teaches the antenna 120a &*

120b can be integrated into a single antenna 120 as shown in Figs. 3 & 4), and providing a control component (*e.g., main controller 210*) to determine whether a received signal comprises signals in the second frequency band (*i.e., the GPS band*) (see col. 6, lines 35-39, col. 10, lines 6-8 & 44-46 and Fig. 5); coupling the second antenna (*i.e., auxiliary antenna 120*) to a first switch (*e.g., a switching module 185*) (see col. 5, lines 12-22 and Fig. 4); further coupling the first switch (*i.e., the switching module 185*) to one of a first tuning circuit (*e.g., signal processing module 180c*) that facilitates tuning the second antenna for reception of a signal in a second frequency band when the control component determines that the received signal comprises signals in the second frequency band (see col. 5, lines 39-52 and Fig. 4), and a second tuning circuit (*e.g., signal processing module 180b*) that facilitates tuning the second antenna for reception of a signal in at least the first frequency band received by the first antenna (see col. 5, lines 39-52 and Fig. 4); and wherein the first antenna (*i.e., the main antenna 110*) is for reception and transmission of signals in at least the first frequency band (*i.e., the cellular or PCS band*), and the second antenna (*i.e., the auxiliary antenna 120*) is only for reception of signals in at least the first frequency band and the second frequency band (*i.e., the GPS band*) (see col. 5, lines 12-26 and col. 9, lines 49-66).

However, Forrester fails to anticipate or render the above underlined limitations in combination with all the recited limitations of claim 21 obvious, over any of the prior art of record, alone or in combination.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY S. ADDY whose telephone number is (571)272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. S. A./
Examiner, Art Unit 2617

/Patrick N. Edouard/

Supervisory Patent Examiner, Art Unit 2617